UGS BOARD MEETING
Department of Natural Resources
Utah Geological Survey, Utah Core Research Center
240 N. Redwood Road, Salt Lake City
Wednesday, January 19, 2021

The meeting of the UGS Board was called to order at 8:31 a.m.

ATTENDANCE

Board members: Elissa Richards – Chair, Ken Fleck – Vice-Chair, David Garbrecht, Riley Brinkerhoff and Becky Hammond. Sam Quigley, Rick Chesnut, and Tom Faddies were not in attendance.

***UGS Staff*:** Bill Keach, Mike Hylland, Jodi Patterson, Cheryl Wing, Jay Hill, Hollie Brown, Mike Vanden Berg, Jessica Pierson, Cyndi Andersen, and Steve Bowman. Stefan Kirby and Becka Downard attended until after the new staff introductions. Jim Kirkland, Andrew Rupke and Elliot Jagniecki joined for the presentations.

DNR Executive Staff:
Brian Steed and Nathan Schwebach joined to swear in new board members.

Guests:
Andrew Milner and Diana Call joined for the presentation given by Jim Kirkland.

APPROVAL OF MINUTES

Elissa Richards motioned to approve the minutes of the August 11, 2021, UGS Board meeting. Riley Brinkerhoff seconded the motion. The Board voted, and the motion carried.

ACTION ITEM

Although contract proposals for external funding are provisionally approved by the Board by email, they require formal approval at the next Board meeting. The proposals are:

FORGE Phase 3 (Year 3); funding from EGI, University of Utah; new funding to the UGS $216,961; total project funding $216,961; estimated start date 10/1/2021; estimated end date 9/30/2022.

Delineating Groundwater Boundaries in the Virgin River Basin; funding from the Washington County Water Conservancy District; new funding to the UGS $41,128; total project funding $82,255; estimated start date 10/1/2022; estimated end date 9/30/2023.

BLM UTSO Utah Paleontology Resource Data Management; new funding from the BLM; new funding to the UGS $29,995; total project funding $59,990; estimated start date 7/1/2022; estimated end date 6/30/2023.

Biosignatures in hypersaline lacustrine environments of the Great Salt Lake; funding from NASA; new funding to the UGS $146,038; total project funding $1.8 million; estimated start date 7/1/2022; estimated end date 6/30/2025.

Utah STATEMAP 2022-2023; funding from the USGS; new funding to the UGS up to $903,450; total project funding up to $1,806,900; estimated start date 7/1/2022; estimated end date 6/30/2023.

Canyonlands National Park Phase II Paleontology Inventory and Monitoring; funding from the National Park Service; new funding to the UGS $25,000; total project $50,000; estimated start date 3/1/2022; estimated end date 9/30/2022.

Utah Geological Survey Groundwater Chemistry and Water-Level Network Support; funding from the U.S.G.S.; new funding to the UGS $41,426; total project funding $53,468; estimated start date 7/15/2022; estimated end date 6/30/2024.

Elissa Richards motioned to formally approve the project proposals. Riley Brinkerhoff seconded the motion. The Board voted, and the motion carried.

2022 Dates for Board Meetings
Wednesday, April 13, 2022
Wednesday, August 10, 2022
Board field trip – September 15-17, 2022. Possibly planning a Great Salt Lake trip.
Wednesday, January 18, 2023

Don DeBlieux is a member of the paleontology program and serves as Dr. Jim Kirkland's right hand. His degree is in Zoology. His job classification is Geologist and has been for the past 20 years. Current policy limits promotion without a current PG license. UGS is requesting the Board to waive the requirement in this policy for this one case for Don so he can be promoted.

Elissa Richards moved to waive the requirement of a geology degree and PG license for Don DeBlieux so he can be promoted. Board voted and the motion carried.

NEW BOARD MEMBERS SWEAR IN

Brian Steed swore in Becky Hammond and Riley Brinkerhoff as new board members.

DIRECTOR'S REPORT:
COVID-19 update
COVID-19 continues to impact UGS staff. With the recent resurgence many have returned to working from home. For the most part, fieldwork has also resumed with an increased focus on personal safety. Partnering agencies have also implemented their own safety protocols which require additional coordination efforts. The State of Utah has set forth several guidelines which are closely followed by management and staff.

Personnel Changes

Retirements:

Officially, none known at this time. We are anticipating several in the coming year.

New hires:

Katie Cummings – New UCRC curator. Previously Katie has worked for Vulcan Minerals and the North Carolina State Geological Survey.
Cyndi Andersen – GIS Manager, replacing Gordon Douglass. Cyndi previously worked for Bannock County, Idaho
Kaitlyn Bocik – GIS Analyst in Mapping
Jessie Pierson – Sr. GIS Analyst in GIO
Becka Downard – Wetlands Specialist, transferred from the Division of Water Quality
Austin Jensen and Ethan Cowgill – Geotechs, assisting in Energy and Minerals
Elisabeth Stimmel – Wetlands mapper (rehire)

Other changes:

Marshall Robinson – promoted to Information Technology Manager, leads our Data Management Program
Stefan Kirby – has accepted to become the new Program Manager for Mapping and Paleontology. Grant Willis anticipates retiring in the coming year

Recent activities – Looking forward

Geologic Information & Outreach –

The Geologic Information and Outreach program has been busy providing information to the public, who continue to recreate outdoors in record numbers, seeking respite from the pandemic. An extensive review of the Popular Geology pages on our website has been completed. These pages will go live as soon as comments are addressed.

Our Editorial Services group finished the layout of the DNR Annual Report this week and is working diligently with the Hazards program and partner agencies on an extensive update of *Putting Down Roots in Earthquake Country, Your Handbook for Earthquakes in Utah*. This publication is a fundamental tool for educating the public and legislature about Utah's seismic hazards. UGS now makes regular posts on LinkedIn, in addition to Facebook, Twitter, and Instagram. Our LinkedIn posts are regularly read, liked, and shared. Jessie Pierson is our new Cartographer/GIS Analyst.

Our new bookstore staff, Jackson and Torri, are doing a wonderful job. They continue to organize and improve the inventory, sales floor, and stockroom. In the past four months they have received nine Google reviews, all of them five stars. We are developing more print on demand products, such as hunt unit boundary maps produced with ArcGIS. Staff are wearing masks on the sales floor and customers are encouraged to do so with signage from Salt Lake County and masks available on the sales floor. Per the Governor's guidelines, customers are not

required to wear masks in state buildings. The bookstore continues to be open for walk-in business from 10 am to 5 pm, with online orders being filled before 10.

Our new PIO, Hollie Brown, drafted a press release highlighting UGS studies on the Bonneville Salt Flats, which is awaiting review by our partner agencies. We continue to have substantial media interest in the Great Salt Lake and its microbialites and mirabilites.

Energy and Minerals –
Katie Cummings started as the new Core Center curator. We'll meet her during the meeting.

Andrew and Elliot published RI-283: *Salt Crust, Brine, and Marginal Groundwater of Great Salt Lake's North Arm*. A very timely report on north arm salinity conditions and state of the north arm salt crust. They have also been very active in discussions of causeway breach modification with the GSL Salinity Advisory Council. We will hear more about this later in the meeting. Mike Vanden Berg gave an overview presentation on Great Salt Lake (GSL) microbialites at a town hall meeting organized by the Great Salt Lake Institute, discussing how low lake levels are impacting the microbialites and how these impacts ripple up through the entire GSL ecosystem. The town hall was attended by about 60 people.

Stephanie and Andrew continue to give presentations on Utah's critical minerals, establishing UGS as the go-to agency for critical mineral information. Research continues on the Gold Hill mining district (west-central Tooele County)

Christian continues geothermal research associated with three large DOE-funded projects (FORGE, Ingenious, and Steptoe Valley). Will and Kayla spent 11 weeks in the field from summer to fall collecting gravity data around the state. The geothermal team also put together a two-page handout on Geothermal Resources in Utah for the upcoming legislative session (at the request of the Office of Energy Development).

Eugene and Elliot continue their research on the Cane Creek shale (eastern Utah) and the general burial history of the northern Paradox Basin. Our geologic research contributed to Zephyr Energy drilling a successful horizontal well in the Cane Creek near Green River. This was the first horizontal well drilled in the area and the first established production in decades.

We kicked off our new Iron Mountain CO_2 project, which aims to understand possible reservoirs suitable for CO_2 sequestration in the Iron Mountain area west of Cedar City. We have begun to interpret legacy 2D seismic and analyze cuttings material from nearby wells. An abstract on progress was just accepted to the GSA Rocky Mountain Section meeting.

We have also kicked off the CORE-CM project with the University of Utah, looking at Rare Earth Elements and critical minerals in coal and coal-adjacent strata. This project is being led by Ryan Gall.

Geologic Hazards –
The Geologic Hazards Program released an all-new version of the *Utah Aerial Imagery Database* (https://imagery.geology.utah.gov) in late 2021, and the new database is highlighted in the current issue of Survey Notes (https://geology.utah.gov/map-pub/survey-notes/the-new-utah-aerial-imagery-database-a-statewide-resource-of-historical-aerial-and-related-imagery/). The database currently includes over 277,000 images, 4300 index sheets, 1700 camera/lens reports, and 110 project and other documents. Additional images and related items are being added weekly. To reduce storage costs and improve data availability, we are using cloud-based, object storage.

Groundwater & Wetlands–
GWP has responded to the statewide priority of preventing potential ecological and economic crisis associated with decline in GSL water levels by (1) engaging in a study with The Nature Conservancy to evaluate surface water and groundwater, and vegetation/habitat resources of the Great Salt Lake Shorelands Preserve; (2) assisting in data collection for the USGS' regional groundwater flow model; and (3) writing a proposal to fill critical data gaps in salinity studies, wetlands, and groundwater inflow.

Our study of the Matheson Wetlands Preserve water budget, brine layer, and vegetation is well under way. We have installed an eddy-covariance flux tower to measure evapotranspiration from the wetlands, and pressure transducers, some of which record both water levels and specific conductivity, in existing monitor wells on the Preserve.

The Wetlands group hired Elisabeth Stimmel in October 2021 to help with the wetland mapping program that is led by Diane Menuz and Pete Goodwin. Progress is good and currently focused on completing a project in Cache Valley. Utah Lake mapping awaits and is very timely considering the proposed restoration project.

The Wetlands group completed a report analyzing water levels in Snake Valley spring-fed wetland complexes and a first attempt to link them to critical habitat metrics for Utah Conservation Species/Species of Critical Environmental Concern.

Diane Menuz and Miles McCoy-Sulentic recently wrapped up an assessment of Central Basin wetlands, combining intensive field studies with remote sensing analysis to better understand wetlands in this region. They are currently starting on an assessment project for the montane ecoregion of Utah.

Mapping & Paleontology –
Mapping
Stefan Kirby will be the new program manager in the next month or so. Grant is stepping away from managerial responsibilities (after 28 years) to work on some projects before he retires.

Rosemary Fasselin was selected as the 2021 UGS Employee of the Year by her peers.

Work was finished on the biggest STATEMAP-related grants we have ever had, a total workload of $1,009,835. Help was enlisted from other UGS programs. Temporary GIS staff were hired to help complete the project.

Mapping is facing several particularly daunting challenges:

- Our primary source of outside funding is the USGS-administered STATEMAP component of the National Cooperative Geologic Mapping Program (NCGMP). NCGMP and STATEMAP have received a large infusion of federal funds over the past two years:

FY22 - $574, 456 (total $1.15M)

FY21 - $504,918 (total $1.01M)

FY20 - $458,577 (total $917,154)

FY19 - $157,273 (total $314,546)

We just submitted an even larger proposal asking for $900,000 ($1.8M in projects). We won't be awarded all that was proposed, but we need to plan for a large increase over this year's award.

- This huge growth has put a severe strain on our entire program. We delivered 22 contract deliverables to the USGS in October compared to 5 the year before. We have over 30 due this year.

- We have added two GIS Analysts to help carry this load. We need to add at least three more in the next month or so to be able to complete this year's commitment as this work is very GIS intensive.

- Training all these new people is putting a severe strain on our senior GIS Analysts. The geologic mapping workload is more manageable as it is spread among several programs.

- Three senior people have stated their intentions to retire within the next several months, though none have yet submitted their papers. This uncertainty makes it hard to plan and assign projects to complete commitments.

<u>Paleontology</u>
The National Park Service has funded Paleo for a phase 2 Canyonlands Paleo Inventory Project as the only paleo project funded by NPS nationally. An article on 20 years of NPS-UGS Paleo collaboration has been requested by NPS for their newsletter. The Paleo program is bringing on a 0.67 FTE tech to work in the lab prepping and curating fossils, and a 0.33 FTE tech to archive historic UGS paleo data. Published on first chimaeroid (rat fish) egg case remains found regionally in Late Cretaceous formations. Our amazing Morrison plant site near Blanding, in addition to a giant water bug (published) and crayfish (manuscript in review), has yielded a splotch amioid (bowfin) fish puke with salamander and frog bones (submitted to PALAIOS).

Data Management
The UGS collects a significant amount of data and strives to make it available to the public as quickly as possible. To address the projected future growth of our data repositories, the UGS

created the Data Management Program to work with UGS staff to ensure that their data are collected, stored, and delivered in a secure, highly compatible, and efficient way. The program also manages the UGS website, the predominant venue for sharing UGS data, and develops web applications and interactive databases available on the website. The program is staffed by the previous Web Services Section of the Geologic Information & Outreach Program and is managed by Marshall Robinson. Additionally, the GIS Manager position is now in this program and was recently filled by Cyndi Andersen, who was previously the GIS Director for Bannock County, Idaho. Find out more about the Data Management Program and its projects at https://geology.utah. gov/about-us/data-management-program/.

We currently have 33 projects on our plate, with over 200 feature-requests/bugs/new-app-requests in our queue to address. We're doing our best to keep a good handle on everything coming at us. The UGS website is one section away from being completely redesigned, the Geologic Map Portal can now share a URL that takes people directly to a specific map/location, the Wetlands application continuously gets new data, and the Groundwater Monitoring Portal is also receiving a full rewrite. The Historical Aerial Imagery Application was fully reviewed and released, and the Publications Repository webpage is very close to finishing its review before final release.

Cedar City office – Please see the separate report from Tyler and Lance

Funding and budget –
The State of Utah is weathering well the economic challenges related to the COVID-19 pandemic. The economic challenges of the past two years underscore the need for the UGS to obtain stable resources to ensure the UGS can continue providing critical services to the State of Utah.

Mineral Lease revenues rebounded in 2021, ending up at about $1,000,000 to the UGS. This is slightly less than 2020, once again proving the volatility in this revenue source. UGS leadership continues to believe that Mineral Lease funds are not a sustainable, reliable funding source for core operating expenses. To that end the UGS has sought the stability of state General Funds to maintain core services and seeks to use Mineral Lease funds as a mechanism to balance fluctuations in outside funding, while still maintaining the mineral-related objectives tied to Mineral Lease funds.

We continue to pursue other funding options to maintain services to the State at current levels.

We are closely monitoring the revenue from oil, gas and mining severance taxes being deposited in the new restricted account created by Senate Bill 133 in last year's legislature. Being only two quarters into this new revenue source, it is still too early to know if this will be an effective and sufficient funding mechanism for the UGS.

For FY23, following recommendations from the UGS Board, the UGS proposed significant Building Blocks, exceeding $1,500,000 and including several new fully funded positions. Ultimately, the Governor included two new positions for the UGS in his budget

recommendations: 1) a groundwater geologist and 2) an earthquake hazards geologist. Feedback from the Governor's Office of Planning and Budget indicated that funding for new positions is very hard to get. Additionally, the Governor included in his budget a recommendation for $150,000 of one-time funding to do a feasibility study for an Earthquake Early Warning system. There is a lot of interest this year in earthquake risk-reduction and resiliency efforts.

Financial Update –
FY22 has been much better than FY21. Mineral Lease revenues have stabilized, at least for the near term. Energy prices are higher than in past years.

Financial documents in the Board packet include the FY22 UGS Budget-Actual-Forecast Summary (through November 2021) and the contracts tracking summary. The UGS is currently forecasting a 2022 fiscal year surplus of $2,194,616. Part of that surplus estimate is $730,000 for the Great Salt Lake Groundwater studies and $477,900 for the Bonneville Salt Flats Restoration project. We have requested non-lapse authority up to $1,000,000 for general operating items. We started FY22 with a carry-forward from last fiscal year (2021) of $2,253,648 ($750,000 Great Salt Lake Groundwater studies, $997,648 Bonneville Salt Flats Restoration, and $506,000 general operating).

November represents 42% of the fiscal year completed. Total percentage of outside revenue billed is about 31%. After December's financials, we will conduct a mid-year, detailed review of project and operating budgets and make forecast adjustments as necessary. Jodi anticipates having to reduce grant revenue estimates upwards of $200,000.

Legislative Update – Currently working with a few legislators on earthquake and URM-related issues. We are also finalizing the radon-study report required by House Bill 45 in last year's legislature.

Staff Presentations –

Jim Kirkland with assistance from Andrew Milner and Diana Call presented on the St. George Dinosaur Discovery Site and a made a request to the Board to designate it as a State Paleontological Landmark.

Elissa Richards motioned pending all permissions needed to approve the Dinosaur Discovery Site as a State Paleontological Landmark. Ken Fleck seconded the motion. Board voted and motion carried.

Elliot Jagniecki and Andrew Rupke presented on North Arm Salt Dissolution and Precipitation: Aftermath of 2016 New Causeway Bridge Opening.

Board adjourned at 11:29 am.